THIS OPINION WAS NOT WRITTEN FOR PUBLICATION

The opinion in support of the decision being entered today (1) was not written for publication in a law journal and (2) is not binding precedent of the Board.

Paper No. 32

UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE BOARD OF PATENT APPEALS
AND INTERFERENCES

Ex parte EIJI OKAMURA

Appeal No. 96-1895
Application 08/011,682[1]

HEARD: May 7, 1999

Before HAIRSTON, BARRETT, and LALL, Administrative Patent Judges.

BARRETT, Administrative Patent Judge.

DECISION ON APPEAL

---

[1] Application for patent filed February 1, 1993, entitled "Positioning Control System," which claims the foreign filing priority benefit under 35 U.S.C. § 119 of Japanese Application 4-016774, filed January 31, 1992.

This is a decision on appeal under 35 U.S.C. § 134 from the final rejection of claims 1, 4, and 6-14.

We reverse.

BACKGROUND

The disclosed invention is directed to a positioning control system for positioning a device which has mechanical resonance characteristics, such as a magnetic head of a magnetic disk drive. The control system has an arithmetic control means for generating a drive signal based on a position signal from a position detecting means, which includes a low pass filter for suppressing the resonance frequencies of the device. In the past, as shown in appellant's figure 3, filters have used a notch filter group comprising a number of notch filters connected in cascade to eliminate many mechanical resonances simultaneously (specification, page 8). Appellant's invention, as shown in figure 6, has an arithmetic control means 3 with a low pass filter 7 comprising a notch filter 5 and an elliptic function filter 6 "which replace the notch filter group of the prior art" (specification, page 13, lines 21-22, as amended). Appellant also uses a switch, as shown in

figure 13, to turn the low pass filter OFF during a seek operation and ON during a settling operation.

Claim 1 is reproduced below.

1. A positioning control system comprising:

a controlled device which has resonance characteristics, including resonance frequencies, and is positionable at a designated position;

position detecting means for detecting a moved position of the controlled device;

arithmetic control means for generating a drive signal based on a position detection signal from the position detecting means and based on said designated position; and

drive means for moving the controlled device in accordance with said drive signal from said arithmetic control means,

said arithmetic control means includes a low pass filter which has an abrupt slope and a discontinuous pole in the gain-frequency characteristics thereof, so that said resonance frequencies of said controlled device can be suppressed by means of said low pass filter, said arithmetic control means further comprising switch means for selectively turning said low pass filter off and on

wherein said switch means selectively turns said low pass filter off during a seek operation of said controlled device and on during a settling operation of said controlled device and wherein said lowpass [sic] filter comprises a notch filter having said abrupt slope for suppressing a lowest resonance frequency and an elliptical function filter having said pole for suppressing a second lowest, or higher, resonance frequency.

The examiner relies on appellant's admission "that the species of magnetic head, optical head and print head positioning system are not believed to be patentably distinct" (page 4 of the Amended Brief received September 15, 1995, Paper No. 21) and the following prior art:

Abed	4,949,201	August 14, 1990
Kanda et al. (Kanda)	5,168,398	December 1, 1992 (filed July 25, 1990)

B.P. Lathi, Modern Digital and Analog Communication Systems, (2d ed., Holt, Rinehart and Winston, Inc., 1989), pages 88-82.

The examiner has withdrawn the objection to the specification under 35 U.S.C. § 112, first paragraph, for failing to provide an adequate written description of the invention and the best mode. The examiner had not rejected any claims based on these grounds.

The examiner has also withdrawn the withdrawal of claims 7 and 8 under 37 CFR § 1.142(b) as being directed to non-elected species and has entered a new ground of rejection as to these claims in the Examiner's Answer.

Claims 1, 6/1, 9, and 11-14 stand rejected under 35 U.S.C. § 103 as being unpatentable over Abed and Kanda.

Claims 4, 6/4, and 10 stand rejected under 35 U.S.C. § 103 as being unpatentable over Abed and Kanda, further in view of Lathi.

Claims 7/1 and 8/1 stand rejected under 35 U.S.C. § 103 as being unpatentable over Abed and Kanda, further in view of appellant's admission. This is a new ground of rejection added in the Examiner's Answer.

Claims 7/4 and 8/4 stand rejected under 35 U.S.C. § 103 as being unpatentable over Abed, Kanda, and Lathi, further in view of appellant's admission. This is a new ground of rejection added in the Examiner's Answer.

We refer to the Final Rejection (Paper No. 12) (pages referred to as "FR__") and the Examiner's Answer (Paper No. 22) (pages referred to as "EA__") for a statement of the examiner's position and to the Amended Appeal Brief (Paper No. 21) (pages referred to as "Br__") and the Reply Brief (Paper No. 23) (pages referred to as "RBr__") for a statement of appellant's arguments thereagainst.

OPINION

Appellant argues that Abed and Kanda do not disclose the following features of the independent claims: (1) "a configuration of a positioning control system, in which a low pass filter is constituted by an adequate combination of a notch filter and an elliptical function filter (Br12); and (2) "turning ON the low pass filter by a switching operation when a seek operation proceeds to a track following operation" (Br12).

(1) Low pass filter comprising notch filter and elliptical function filter

Claim 1 recites a positioning control system having a "low pass filter which has an abrupt slope and a discontinuous pole in the gain-frequency characteristics thereof . . . wherein said lowpass [sic] filter comprises a notch filter having said abrupt slope for suppressing a lowest resonance frequency and an elliptical function filter having said pole for suppressing a second lowest, or higher, resonance frequency." Claim 9 recites a positioning control system having a "low pass filter which has an abrupt slope and a discontinuous pole in the gain-frequency characteristics thereof . . . wherein said low pass filter

comprises a notch filter having said abrupt slope and an elliptical function filter having said pole, so that all the resonance frequencies occurring in said resonance characteristics can be suppressed." Claim 14 recites a positioning control system having a "low pass filter which has an abrupt slope and a discontinuous pole in the gain-frequency characteristics thereof . . . wherein said low pass filter is constituted by a combination of a notch filter having said abrupt slope and an elliptical function filter having said pole, so that all resonance frequencies occurring in said resonance characteristics can be suppressed." Therefore, the independent claims require a low pass filter having both a notch filter and an elliptical function filter.

The examiner finds that "Abed, see Fig. 3 at 149, col. 8, lines 3-9, Fig. 11, and col. 13, lines 51-68 (the analog filter of Abed is considered to be a part of Abed's 'arithmetic control means'), discloses the invention as claimed except for switching his filter on and off and setting an initial condition when the filter is off" (FR4; EA4). Element 149 in figure 3 is a resonant filter. Abed

states (col. 8, lines 6-8): "In the preferred embodiment, applicant utilities [sic] an elliptic filter having a combined low pass and notch response . . . ." Figure 11 shows a schematic diagram of the resonant filter 149 of figure 3. Abed describes that the components are "configured to provide an elliptical filter having the following combined low pass and notch transfer function T(S)" (col. 13, lines 55-57).

Appellant responds that "[a]s discussed on page 7 of Amendment B [sic, Amendment C received March 13, 1995, Paper No. 14], the disclosure cited by the Examiner contains no description of a low pass filter comprising an adequate combination of a notch filter and an elliptical function filter" (Br13). We note that the brief should be self-contained and not refer back to other papers. Arguments not in the brief may be refused consideration. Compare 37 CFR § 1.192(a) (1994) ("Any arguments or authorities not included in the brief may be refused consideration by the Board of Patent Appeals and Interferences." [Emphasis added.]) with § 1.192(a) (1995) ("Any arguments or authorities not included in the brief

will be refused consideration by the Board of patent [sic] Appeals and Interferences, unless good cause is shown." [Emphasis added.]). Nevertheless, we have examined the arguments at page 7 of Amendment C and find no argument why the cited portions of Abed do not describe a low pass filter comprising a notch filter and an elliptical function filter; appellant merely states that they do not.

Notwithstanding the lack of argument or explanation by appellant in the brief, it is evident that the resonant filter 149 in Abed does not meet the express claim limitations of a "low pass filter" having both a "notch filter" and an "elliptical function filter." Abed has only an "elliptical function filter." This point was brought out at the oral hearing. The notch filter and elliptical function filter are disclosed to be separate elements as shown, for example, in figure 6, and are claimed as separate elements. Abed discloses an "elliptic filter having a combined low pass and notch response" (col. 8, lines 7-8). As evident from appellant's figure 7, an elliptical filter

has a low pass region and a notch.[2] The fact that the elliptical function filter has a notch does not meet the requirement for a notch filter in addition to the elliptical function filter, i.e., an elliptical function filter with a notch is not the same thing as a notch filter in addition to an elliptical function filter. For this reason, the rejections of claims 1, 4, and 6-14 are reversed.

(2) Turning the low pass filter OFF and ON

Although we have reversed the rejections based on the limitations to a notch filter and an elliptical function filter, we address the arguments regarding turning the low pass filter ON and OFF for completeness.

Claims 1 and 14 recite "switch means for selectively turning said low pass filter off and on wherein said switch

[2] Figure 7 was amended by the amendment filed September 16, 1994, (Paper No. 11) to change the label on the dashed line (representing a conventional low pass filter) from "(I)" to "(II)" and the label on the solid line (representing an elliptic function filter) from "(II)" to "(I)" per the examiner's Office action entered March 10, 1994, (Paper No. 7).

means selectively turns said low pass filter off during a seek operation of said controlled device and on during a settling operation of said controlled device." Claim 9 contains a similar limitation, but refers to a "magnetic head" instead of the "controlled device."

The examiner relies on Kanda, column 7, lines 32-39, and the switching circuits 32, 35, integrator 30, and arithmetic control means 31 (FR4; EA4-5). We look at the teachings of Kanda as a whole.

Kanda discloses (col. 1, lines 18-21): "The seek control operation of the servo system includes a speed control operation, transient control operation (stop control operation) and positioning control/operation (track following operation)." So, Kanda discloses a speed control operation, corresponding to appellant's "seek operation," a transient control operation, and a track following (position control) operation. Kanda also discloses (col. 1, lines 28-31): "The transient control operation <u>settles the state of the head</u> when a shift is made from the speed control operation to the track following operation" (emphasis added). Thus, the transient control operation and

track following (position control) operations in Kanda correspond to the claimed "settling operation." Kanda has a phase compensation circuit (PCC) 31, the purpose of which is described as follows (col. 2, lines 25-30): "The phase compensation circuit is composed of a filter, such as a notch filter and lead lag filter, and adapted to suppress a resonance point in a mechanical system, such as a carriage and to prevent an oscillation phenomenon resulting from a phase delay." Thus, PCC 31 serves the same purpose as appellant's low pass filter.

The question is whether the PCC 31 in Kanda is turned OFF and ON as recited in the claims. Kanda discloses (col. 4, lines 54-66):

> A fifth switching circuit 36 is turned ON at a time of track following operation and delivers the position signal PS from the position signal generator 20 to the integrating circuit 30. An integrating circuit 30 integrates the position signal PS from the position signal generator 20 to deliver a result of integration to a PCC (phase compensation circuit) 31. PCC31 [sic] is composed of a filter, such as a notch filter and a lead lag filter. A third switching circuit 32 is turned ON at a time of track following operation to supply a compensated replica of the position signal coming from PCC31 [sic] to the motor driving circuit 27.

The switching circuit 32 is turned OFF at the time of the seek operation (col. 8, lines 43-46) and at the time of the transient control operation (col. 9, lines 19-20) and ON upon a shift from the transient control operation to the track following control operation (col. 6, line 67, to col. 7, line 3). The switching circuit 32 effectively performs the function of switching PCC 31 ON and OFF. Therefore, Kanda teaches a position control system, as recited in the independent claims, where "switch means selectively turns said low pass filter off during a seek operation of said controlled device [or magnetic head in the case of claim 9] and on during a settling operation of said controlled device [or magnetic head in the case of claim 9]."

Appellant argues that "[a]s described in Amendment B [sic, C], Kanda et al. likewise fail to disclose that the low pass filter (i.e., the PCC 31 of Kanda et al.) is turned ON by a switching operation when a seek operation proceeds to a track following operation" (Br15). Again, although arguments belong in the brief, we have considered the arguments in Amendment C (Paper No. 14). Appellant argues

(Paper No. 14, page 7): "The PCC 31 follows the integrator 30 in FIG. 1 of Kanda et al. The PCC 31 is composed of a filter, such as a notch filter and a lead lag filter. Kanda et al. never switch the PCC 31 ON/OFF since the response time of the PCC 31 is not in issue." We disagree, since Kanda effectively turns PCC 31 ON and OFF using the switching circuit 32. Appellant argues that "[t]he section of Kanda et al. cited by the Examiner (column 7, lines 32-49) only describes how the integrator circuit 30 is switched ON/OFF, and does not mention the PCC 31 being switched ON/OFF" (Br15). Appellant fails to consider Kanda as a whole, which does teach turning PCC 31 ON and OFF. Kanda does not disclose why the filter PCC 31 is switched ON and OFF; however, no function for the switch is recited in the claim. Appellant has not argued in the brief that the combination of Abed and Kanda is improper. Accordingly, we are not persuaded that the combination of Abed and Kanda is improper as to the limitation of switching a resonance filter ON and OFF.

CONCLUSION

The rejections of claims 1, 4, and 6-14 are reversed.

REVERSED

KENNETH W. HAIRSTON)
Administrative Patent Judge)
)
)
)
) BOARD OF PATENT
LEE E. BARRETT) APPEALS
Administrative Patent Judge) AND
) INTERFERENCES
)
)
)
PARSHOTAM LALL)
Administrative Patent Judge)

Patrick G. Burns
GREER, BURNS & CRAIN, LTD.
Sears Tower - Suite 8660
233 South Wacker Drive
Chicago, IL 60606